New England
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Characteristics of New Enterprises

PART I—THE FIRM

Millions of Americans dream of owning their own businesses. For many the dream becomes a reality, for others it does not. The desire for a better life that once drew people to the frontier today often leads a man to establish his own business. The less money he has the more likely that he will found a new firm rather than buy a going one.

This study deals with the establishment of new firms in Connecticut from August 1945 (the conclusion of World War II) through December 1954. The term "new firms" is here restricted to those that are completely new entities, and does not include those that have merely changed ownership or name.

New England has an important stake in the development of new enterprises within its borders. This stems partly from the great reliance of New England on manufacturing and from the contraction of its textile industry. In addition

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New England cannot expect to be a center for large mass-production industries because of its lack of raw materials and its high power and high transportation costs. The region relies heavily on its technological know-how. It has a highly skilled labor force, a diversity of firms working in technically advanced areas of manufacturing, and world famous research centers. The New England industries that have been growing most rapidly—aircraft engines and parts, helicopters, electronics, machine tools and chemicals—are ones in which the region's technical resources give it an advantage.

Some new firms introduce new products or more efficient ways to produce existing ones. Many ideas get their first test in this way. Once the new firms are in operation they are a fruitful source of further ideas. Other new firms have been important in maintaining and expanding New England's industrial structure. The continued birth of such firms will considerably enhance New England's future.

Little systematically collected information is available about new firms. Fortunately much of what is known is based on studies of New England firms.[1]

Eleven hundred new firms established in Connecticut during the 1945-54 period were operating in the summer of 1955. Founders of 501 of these firms replied to a mail questionnaire asking for personal information and details as to the size and products of their businesses. The founders of a five per cent random sample of all 1,100 firms were selected for interviewing. The 48 interviewees were asked a wide range of questions on why they had founded their firms and their principal problems before and after the start of manufacturing.

Size of New Firms

From the very outset one problem facing new firms is how to grow. Seventy-five per cent of the new firms in Connecticut began manufacturing with less than five employees—including owners—and over 90 per cent had less than 10. Many firms remain small. Of those founded prior to 1950, 21 per cent still had less than four employees, 41 per cent had less than 10, and 85 per cent had less than 50, when surveyed in 1955.

The number remaining small partly reflects the types of business entered and the feeling of some owners that they do not want—or that it would not pay—to become larger. Several questioned their ability to direct a larger, more complicated operation. Most of the others expressed a belief that they would have to triple their investment to increase profits sufficiently to make expansion worthwhile. This they chose not to do because of lack of capital, lack of confidence in their ability, or for other reasons.

When measured by initial capital investment, the new firms varied greatly in size. Of the 35 interviewed firms reporting capital investment at the start of manufacturing, six had less than $500. Seven firms were capitalized at $30,000 or better, and in two cases the investment topped $100,000. The median investment was $7,000. Five of the seven with the smallest original investments were begun by founders who held other jobs and ran their own businesses nights and weekends. With their limited resources they bought second-hand machinery and installed it in their own or cheaply rented garages. By putting all receipts back into the business they eventually had sufficient capital to quit their jobs and operate their own firms full time.

Several of the interviewed firms were major producers in their particular niches of the market. One had 80 per cent of the market for a product that was a minor item in a wide line of products for its giant competitors. Another supplied 80 per cent of the needs of one particular group of customers. Two others consistently and profitably underbid some of the largest manufacturers in the country on orders for small numbers of highly technical and individually designed products. Several others that were in small-firm industries were larger than the majority of their competitors.

Form of Organization

The advantages of a corporate structure made it the most common form of organization. Two hundred and six firms were initially organized as corporations, while 145 began as proprietorships and 144 as partnerships. Approximately 80 per cent of the partnerships began with two partners and 15 per cent with three. Within two or three years most partnerships and proprietorships had been reorganized as corporations in order to reduce federal income taxes. Seventy-eight per cent of the corporations had less than

This is a summary of a study, *The Entry of New Firms into Manufacturing in Connecticut, 1945-1954,* presented to the faculty of the Graduate School of Yale University as a doctoral thesis by Gilbert T. Brown. The project was made possible by grants from The Connecticut Bank and Trust Company and the Federal Reserve Bank of Boston. The Connecticut Development Commission provided names of Connecticut's new firms.

[1] This material has been presented in the following issues of the *Monthly Review* of the Federal Reserve Bank of Boston: "Why New Manufacturing Establishments Located in New England," April 1949, "New Manufacturers' Experiences in New England," Sept. 1955, "A Survey of Industrial Opportunities in New England," from August 1952-June 1953, "Ideas and Market Studies for New Business Firms," June and July 1953.

five investors and 90 per cent had less than 10 at the start of manufacturing.

New Business Mortality

Evidence from this study suggests that in the field of manufacturing the number of new business failures is small. While these results may reflect in part the high level of economic activity in recent years, from June 1953 through December 1954 only 76 firms founded after August 1945 went out of business. Fifteen discontinued firms were selected at random for investigation. Two of these were forced into bankruptcy and six others were sold or closed as inadequately profitable. The other seven firms, or nearly half of those in the sample, were all profitable at the time of their sale or closing.

Industries Entered

Forty-two of the 48 interviewed firms were either performing operations on customers' products or producing component parts, tools or equipment for other businesses. Except for office equipment such work was for other manufacturers, and generally to customer specification.

There was no correlation between the growth of an industry and the number of new firms entering it. There was, however, a close correlation between numbers of new firms and numbers of small firms in an industry.[2] This does not mean that the birth of new firms is unrelated to growth in the economy. Rather, Connecticut's experience suggests that growth in an industry of large firms will stimulate the entry of new firms into those industries that are its suppliers and in which many of the firms are small. Thirty per cent of Connecticut's increase in value added by manufacturing between 1947 and 1954 took place in the transportation-equipment industry, primarily aircraft engines and parts and helicopters. Another 20 per cent of the state's increase in value added occurred in the fabricated-metals and nonelectrical-machinery industries, which are important suppliers to the transportation-equipment industry and in which over 60 per cent of the firms had less than 20 employees. One-half of the new manufacturers entered these supporting industries. Of the 48 interviewed, seven had tool and die shops and 26 were fabricators and processors of metal parts.

In view of the marketing problems and working capital needs for widespread distribution of a consumer product, it is not surprising that of the six interviewed firms producing consumer products, only two made standardized items in large quantities. The others at least approached the skilled-craftsman individual-customer type of operation.

Location of the Firm

The location of most new firms is determined by one factor: the residence of the owner or owners. When asked why their firms had been established in Connecticut, the only reason given by 65 per cent of the 501 respondents was that they lived in Connecticut. Seventy-seven per cent of them gave this as one of their reasons, and all but nine mentioned it first.

When asked whether they had planned from the start to locate their firms in Connecticut or whether the advantages and disadvantages were first studied, over 90 per cent replied that they had planned on a Connecticut location from the beginning. This does not necessarily mean that the location decisions were unwise. The founders were largely production-trained employees of Connecticut firms. Since nearly all of them entered fields related to their previous employment backgrounds, they knew something of the feasibility of locating in Connecticut. What is clearly indicated is the importance of personal considerations in determining where the founders of new firms locate their plants.

Ninety owners, or 19 per cent of those replying, mentioned the availability of resources as a reason for locating in Connecticut. Forty per cent of these cited a skilled or good labor supply and 23 per cent mentioned nearness to sources of material supply. Eighty-two, or 17 per cent, cited nearness to their market as a reason for locating in Connecticut.

New Products and Processes

The development of new products and processes has been important in the founding or growth of more than one-fourth of the 48 firms interviewed. All six of the manufacturers of business equipment are in new product fields. Three firms were established to introduce products invented by their founders. Two others are producing new types of electronic equipment involving individual design, and another has introduced several important innovations in a new field. The product of one of the six consumer-goods firms is also new.

The role of new firms in introducing new manufacturing processes is more difficult to determine because of the problem of deciding what constitutes a significant innovation. However, two firms are using and have licensed the use of their own patented machinery, and at least five others have either developed or been

[2] The rank correlation coefficient between number of new firms and number of establishments with less than 20 employees in 1947 for "2-digit" industries was .74, which is significant at the one per cent level.

among the first to adopt major innovations.

Some of these ideas would not have been tested except for the creation of new firms. One engineer designed new machinery capable of cutting manufacturing costs substantially. When his employers refused to adopt any of his ideas, the engineer had the machines built and set up a firm which now supplies one-fourth of the market for its product. A mill superintendent whose ideas on machinery and maintenance were rejected by top management has also been extremely successful with his own firm.

The profit motive leads many owners to seek new products and to find more efficient and improved ways of doing a job. Two firms have patents on products they have not yet started to manufacture. Another founder is considering setting up another firm to produce two new products he has recently developed.

Competitive Advantages

The competitive advantages of new firms in serving manufacturing customers is illustrated by the following condensation of the remarks of two purchasing agents. "The small shops starting out are in an enviable position. They can take care of rush business because they don't have too many customers. If you're in a rush they're willing to work overtime to get a job done for you. You can almost set your own delivery dates. If you want three or four pieces or a gauge, they will come to the office, give you a price and have it on their machine in half an hour. There's no red tape and channeling things through departments, etc. When a small firm gets a blueprint for a job, the owner will mark it "make two of these" and hand the print to a mechanic. A large firm will break down the blueprint given them into specialized blueprints for all the individual parts, have different people make these, and then assemble the finished parts. In a small shop it will be a one-man operation, and he will build each section and component to fit with the others. In a big shop with specialization, where one man only grinds, etc., if there are any errors or things don't fit and they must rebuild some of the parts, there may be considerable delay . . . to change any piece may be a very expensive and extensive operation."

The advantages and disadvantages of new firms are reflected in the factors affecting price and quality of products and the services given customers. The low overhead in new (and small) shops means a substantially lower price on small orders than could be quoted by the large producer with specialized departments. Conversely, the overhead and specialization of the large shop drastically reduce costs when a large number of pieces of the same item are needed. Thus the size of the order will determine which size shop can produce it most cheaply.

When the quality of the product depends upon the skill of the workman, the new firms generally rate very high. The founders of firms in these fields have usually had 10 to 15 or more years experience in the field. They usually inspect all the work personally. In many instances several such men will found a firm, and they often succeed in hiring the best craftsmen of their former employers. But when the performance of high quality work requires the use of expensive equipment which they do not have, then the small new shop cannot provide it.

Because of their eagerness to obtain and hold customers, new firms usually do all they can to provide excellent service. They will work whatever overtime is necessary to meet a customer's deadline and are willing to provide such special services as making small variations between individual items in an order without charge.

There are inconveniences in dealing with new firms on certain orders because they do not have the necessary equipment or personnel. The small tool and die shop, for instance, is usually not able to solve technical engineering or design problems, and after producing the dies it cannot then proceed to use them to stamp out pieces in production volume.

Social Value of New Firms

The chief social benefits from the creation of new firms arise from their contributions to technological advance, to the renewal of the supply of small firms, and to the opportunity for social and economic advancement and personal satisfaction for their founders and employees. The growth of these firms and the success of their owners renew the vitality of our democratic society and free enterprise system.

As is clear from the discussion of the advantages of new firms, small firms have an important place in our economic structure. New small firms must be born to replace those that grow large, are discontinued, or are absorbed by other firms. The growth of the economy and the development of new industries also create situations where additional small firms are needed. If they succeed in growing large they can then better fulfill other potential contributions to the public good, and leave an opportunity for other new firms.

The benefits in personal rewards and satisfactions to founders and employees of new firms will be considered more fully in a subsequent article dealing with the backgrounds and motivations of the founders and their experiences in establishing new firms.

Trust Income Continues Rise in 1956

Total income of New England trust departments continued to rise in 1956. Assets managed by regional trust departments also increased and at many commercial banks these assets exceeded in value the total assets of the remaining departments of the bank. This growth in trust business is solid evidence that the region's trust departments are doing a good job in supplying a needed service.

Total trust income of commercial banks in New England rose at a slightly greater rate than did total bank operating income. Thus the share of total bank income contributed by trust business continued the rise which has been going on since 1946. The rise in trust income in 1956 was not as sharp as in 1955, as may be seen in the accompanying chart. The 1955 rise was accounted for in substantial part by an upward revision of fee schedules, however, while the 1956 increase resulted to a greater extent from growth in the volume of trust business.

Almost all categories of trust income showed an increase, as shown in the accompanying table. The various types of trust services which provide trust income can be described as follows: estates—settling of the estates of decedents; personal trusts—administering and investing funds to which the bank has title as trustee alone or with others; pension trusts—administering pension funds set up by corporations, unions, etc.; personal agencies—managing or acting as custodians for funds owned by living persons, charitable institutions or businesses such as investment management companies; corporate trusts—acting as trustee for a corporate bond issue; corporate agency—handling general bookkeeping details of bond and stock issues, such as transferring ownership, paying interest and dividends, etc.

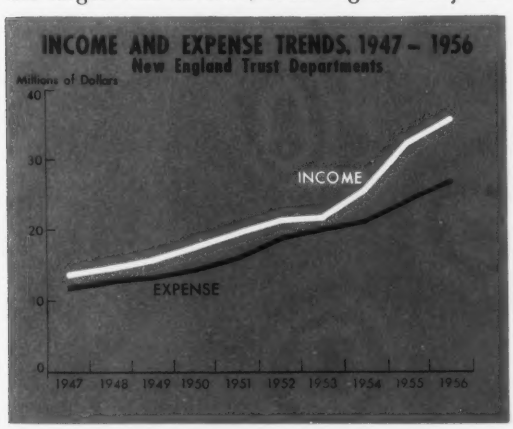
Among expense categories, overhead showed the largest rise in 1956, reflecting not only the general growth in business but also a revision by several large trust departments of formulas for computing overhead charges. Salaries and wages averaged about 10 per cent higher than in 1955, with the increase accounted for almost entirely by higher pay scales as the total number of officers and other employees remained about unchanged. The growth in other direct expenses was accounted for by almost all items except advertising expense which showed a two per cent decline.

A smaller percentage of trust departments reported a loss from operations in 1956 than in any other year since this survey was begun in 1947. Most of the losses were reported among the smaller trust departments, but a marked improvement over the 1955 experience occurred as shown in the following tabulation:

TRUST DEPARTMENT INCOME AND EXPENSE

Surveyed New England Banks, 1956
(Amounts in thousands of dollars)

	10 banks with trust income exceeding $500,000 in 1956		34 banks with trust income from $20,000 to $500,000	
	1956	Per Cent Change From 1955	1956	Per Cent Change From 1955
Income				
Commissions and fees from:				
Estates	$ 2,438	+14.6	$1,019	+36.8
Personal trusts	11,088	+13.3	2,458	+16.4
Pension trusts	581	+27.7	73	+17.7
Personal agencies	4,779	+ 8.9	828	+12.3
Corporate trusts	607	− 1.3	24	− 7.7
Corporate agencies	3,301	+21.3	83	+16.9
Total	**$22,794**	**+13.4**	**$4,485**	**+19.5**
Expenses				
Salaries and wages	$10,012	+13.3	$2,183	+ 8.9
Officers	$ 3,468	+ 5.9	$1,159	+ 8.1
Other employees	6,544	+17.7	1,024	+ 9.9
Other direct expense	4,360	+ 6.1	1,024	+10.0
Overhead	2,387	+25.1	416	+ 9.8
Total	**$16,759**	**+12.8**	**$3,623**	**+ 9.3**



Trust Department Income (000)	Number Profitable 1956	Number Profitable 1955	Number Unprofitable 1956	Number Unprofitable 1955
$10-19	0	0	0	4
$20-49	13	7	5	9
$50-99	7	6	4	3
$100-199	12	10	2	3
$200-499	9	6	0	2
$500+	11	11	0	1
TOTAL	52	40	11	22

Note: At the request of the trust officers of commercial banks in New England, the Boston Federal Reserve Bank has conducted annual surveys of trust department income and expenses since 1947. About 60 banks have generally responded in the survey and their aggregate trust income accounts for approximately 80 per cent of total estimated trust income of commercial banks in New England. A detailed report of the information obtained from the 1956 survey is available on request from the Research and Statistics Department.

Personal Income Gains in N. E. Since 1929

Over the past quarter century per capita income in New England increased almost two and one-half times, rising from $876 in 1929 to $2,087 in 1955. Throughout the period New Englanders enjoyed a per capita income higher than the national average. As a result the region continues to provide a rich market for the goods and services produced within its borders and in the rest of the nation as well.

The United States Department of Commerce has recently made available comprehensive information on personal income payments, by state, for the years 1929 through 1955[1]. These estimates cover current personal income received from all sources by residents of each state. They are a measure of income before tax deductions but after individuals' contributions to social security, government retirement and other social insurance programs.

Total personal income received by New Englanders increased even more than per capita income between 1929 and 1955. In the latter year personal income received from all sources totaled $20.1 billion, an increase of 182 per cent from the boom year 1929. Per capita income increased 138 per cent as the larger income had to support a larger population. Within the region each of the states participated in this income growth with the largest gains in Connecticut and Maine and the smallest in Vermont and Massachusetts.

As substantial as the increases in personal income have been for New England, they have been lower than the gains for the country as a whole and especially for those areas that have experienced above-average increases in population and industrialization.

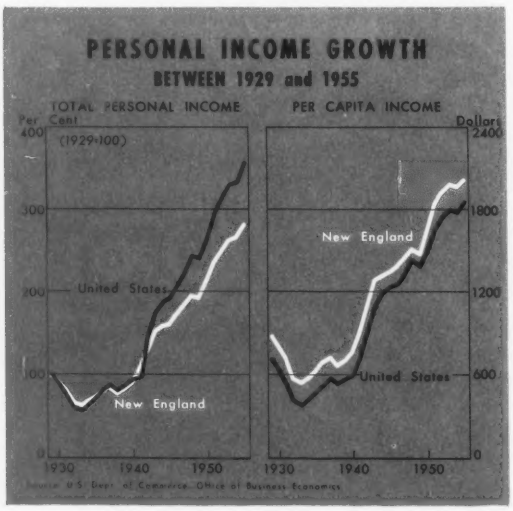
During the depression of the early 1930's, total personal income contracted about 38 per cent in New England and 45 per cent in the United States, but at the end of the decade some recovery had been made both in the region and the country. Accelerated by the defense and war spending of the early 1940's, income payments expanded rapidly in all sections of the nation. The densely populated, highly industrialized New England region did not share in this wartime growth as much as the newly industrialized areas. Most of the decline in the region's share of total United States personal income which occurred in the last quarter century took place during the war years.

Shifts in population and industry fostered by the war have carried over into the postwar period. However, in the decade from 1946 to 1955, New England's relative growth in income has been closer to the national rate than for the longer 1929-55 period even though the region's population increased at only about half the national rate. The number of New Englanders of working age has changed little since 1946, but this income-earning segment of the population expanded by about 10 per cent in the country.

Per capita income has increased more than nationally in the postwar period. Since 1950, the region's relative expansion in per capita income was equalled only by the southeastern region.

In discussing variations in rates of expansion it is easy to forget the absolute levels of income prevailing in the various regions. Even though the percentage increases in per capita income for New England and the Southeast were the same in the period 1950 to 1955, there continued to be a wide gap in the absolute income levels of the two areas. Per capita income in New England was $2,087 in 1955 but per capita income in the Southeast was only $1,291. While New England lagged behind the nation in its relative expansion in per capita income since 1929, the dollar increase of $1,211 was greater than the $1,144 increase for the country.

Even after account is taken of changes in the price level since 1929, personal income increased 126 per cent nationally and 81 per cent in New England. Because the trends of prices for the nation and the regions differed little, the trends and composition of personal income were not affected by the price adjustment. The increased drain of direct personal taxes, however, has



[1] *Personal Income by States Since 1929.* A Supplement to the Survey of Current Business, U. S. Department of Commerce, Office of Business Economics, Washington, 1956.

tended to reduce the gains of the high income areas more than the low income areas because of the greater tax impact. When after-tax income is considered, the disparity between the relative gains in personal income in the nation and New England since 1929 is reduced.

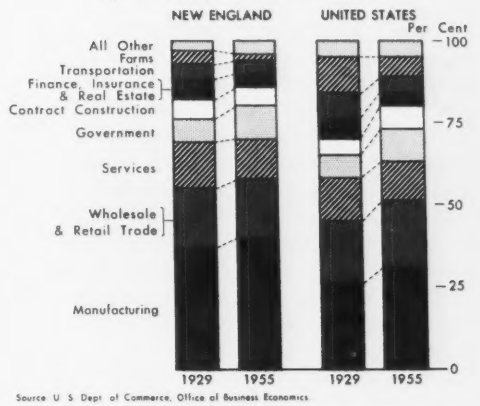
Changes in Sources of Income

Both nationally and in New England farm income has declined in importance over the years. In the region, the share of personal income accounted for by farming declined from 2.7 per cent of total in 1929 to 1.7 per cent in 1955. This sector of the economy also realized the smallest increase in absolute income payments. Farm income declined more sharply in relative importance nationally but still contributed a greater share than did such income in New England.

The relative importance of government income disbursements in New England, in contrast, increased from 6.7 per cent to 16.2 per cent over the same period, principally because of the expansion in Federal government disbursements since the war period. The relative expansion in government income disbursements was the largest for the three main sources of income both in the United States and the region. Principally as a result of the increased importance of government income payments, private nonfarm income has declined in relative importance both in New England and the United States. However, it still supplies over four-fifths of all personal income payments to the region's residents and over three-fourths of such income in the nation. The overwhelming importance of this source of income to our economy means that its trends dominate the rate of change in total personal income. The New England increase of 155 per cent in private nonfarm income between 1929 and 1955 compared to a national gain of 229 per cent, and was an important factor in the region's lower rate of income expansion over the period.

For both region and nation one of the outstanding 1929-55 changes in types of income disbursement was the growth in relative importance of transfer payments (by more than tripling) principally at the expense of the property income component. Transfer payments, made up of such income as social security payments, unemployment benefits, government retirement pensions and veterans' pensions and bonuses, now constitute 6.6 per cent of New England's income and 5.8 per cent of the nation's. Wage and salary disbursements continue to be the most important type of income payment and have also provided a growing proportion of total income. The shifts in relative importance of the various types of income over the years have tended to make more similar the pattern of income distribution for the region and the nation.

DISTRIBUTION OF CIVILIAN INCOME
by Industry, 1929 and 1955



Source: U. S. Dept. of Commerce, Office of Business Economics

Another interesting aspect of the changes in income distribution may be observed by comparing the relative shifts in importance of the industrial sources of civilian income. As the accompanying chart illustrates, between 1929 and 1955 the sizable manufacturing segment of the New England economy increased in importance but not as much as nationally. However, even though manufacturing has expanded more rapidly in other parts of the nation it still does not contribute as large a proportion of income in the country as in New England. In 1955 the manufacturing industries accounted for about 40 per cent of civilian personal income in New England and 31 per cent for the nation.

Because of their paramount importance an examination of the relative importance of the various manufacturing industries as income contributors is of interest. Comparable data is available only for the years 1948 through 1955.

Total manufacturing wage and salary payments increased 31.8 per cent in New England compared with a national increase of 57.4 per cent. The largest relative gains in New England were in the automobile and transportation-equipment industries, paper and allied products, chemicals, and electrical-machinery industries, while the tobacco and textile industries experienced an actual loss. Because textiles are still one of the region's largest manufacturing industries, the loss of about $250 million, or 30 per cent, in income derived from this industry did much to keep the region's manufacturing income from increasing at a greater rate. Only the apparel, furniture and fixtures, leather and leather-products, automobile and transportation-equipment industries, enjoyed a rate of income growth better than the national average.

Easter Sales Strong

Easter Sunday was a beautiful day this year, giving New Englanders an excellent opportunity to display in traditional fashion the finery purchased in record volume from the area's department stores. These stores rang up a sales volume during the four weeks of pre-Easter shopping that was 23 per cent greater than a year ago. Last year, however, volume was sharply reduced by three blizzards occurring within eight days in the midst of the Easter selling season.

In comparison with the record set in the more typical Easter season of 1955, sales this year were nearly five per cent larger. Prices of goods sold by department stores have risen about three per cent since early 1955. Therefore, the five per cent increase in dollar volume over 1955 is due in part to higher prices.

COMPARISON OF EASTER SEASON SALES

NEW ENGLAND DEPARTMENT STORES

Corresponding Weeks Before and After Easter, 1957 vs. 1956

Area	Per Cent Change 1956 to 1957 for Week Ending							
	1957	Mar. 30	Apr. 6	Apr. 13	Apr. 20	Four-Week Total	Apr. 27	May 2	Six-Week Total
	1956	Mar. 10	Mar. 17	Mar. 24	Mar. 31		Apr. 7	Apr. 14	
		Before Easter					After Easter		
Boston Area*		+14	+28	+62	+ 3	+23	+ 2	+ 6	+16
Downtown Boston		+ 6	+20	+53	0	+17	− 2	+ 2	+11
Suburban Boston		+31	+50	+86	+10	+37	+ 9	+15	+27
Cambridge		+41	+24	+48	+ 7	+27	+21	+30	+27
Lynn		+68	− 3	+55	+ 3	+24	−26	− 1	+10
Quincy		+20	+40	+90	+ 7	+31	+19	+34	+29
Lowell Area*		+23	+46	+51	+15	+31	− 2	−10	+18
Springfield		0	+50	+38	+ 1	+19	+ 4	+11	+15
Providence		0	+56	+74	− 2	+25	− 5	−18	+11
Other Cities		+26	+40	+46	+ 3	+25	+24	+ 3	+20
District		**+12**	**+34**	**+59**	**+ 3**	**+23**	**+ 3**	**+ 3**	**+16**

*Standard Metropolitan Area.

The pattern of sales during the pre-Easter weeks this year, with volume building up to a peak the week before Easter, was much more typical of this selling period than was the case last year. The snowstorms cut down expected sales in the third and second weeks before Easter last year and largely explain the substantial gains recorded for the comparable weeks this year, as shown in the table above. Sales were also strong the first week of the season. Although the percentage gain for the week before Easter was not large, it should be remembered that sales in the comparable week last year were boosted by a large volume of storm-delayed purchasing.

Department store sales in all cities and areas for which weekly data are available were substantially above levels for the 1956 Easter season. Gains ranged from 17 per cent for downtown Boston to 37 per cent for the suburban area of Boston. The dependence of suburban stores upon clear roads and parking areas is pointed up by the larger-than-average gains these stores posted in comparison with the snowbound weeks last year. Some of the year-to-year losses shown in the table were occasioned by different dates for special sales events in the two years.

Feminine Apparel Sales Gains Largest

Women's and misses' apparel departments turned in the most striking record, a gain in sales over those during last Easter's season of nearly one-third, as indicated by the reports of downtown Boston stores. Sales of these items were strong all four weeks but recorded greatest gains in comparison with last year's stormswept weeks. Sales of women's and misses' accessories gained slightly more than one-fifth from last year's total. They built up volume each succeeding week, reaching a peak the week before Easter. Sales of other departments, mostly non-Easter-related, also exceeded year-ago levels.

The performance of main store departments in ringing up greater year-to-year gains than did basement departments is encouraging in the face of the increases recorded in the Consumer Price Index. Regard for style and quality appeared to outweigh resistance to higher prices.

Post-Easter sales have compared favorably with the high level of such sales a year ago. In both the weeks immediately after Easter they were three per cent larger than last year, making the total for the six weeks 16 per cent greater than a year ago. Unlike last year, New England's department stores at the end of April had a four-months sales volume two per cent greater than for the similar year-earlier period. They were also not faced with the problem of disposing of Easter merchandise not sold when expected. Their position in the competitive battle for consumers' dollars was therefore improved.

PUBLICATIONS OF INTEREST

***Sources of Guests. New England Ski Area Lodging Places*, February 1957. A study of lodging guests during February, showing their home states and the fluctuation of business during the month. Available upon request from the Research and Statistics Department, Federal Reserve Bank of Boston. Copies of a similar summer vacation study for August 1956 are also available.**

Research Spending GROWS

Massachusetts Manufacturers Plan Increase

Manufacturers in Massachusetts plan to spend nearly $208 million during 1957 for research and development purposes, 21 per cent more than their expenditures for the same purpose last year. Spending for industrial research and development in the nation is expected to rise 20 per cent to $7.3 billion this year, according to McGraw-Hill estimates.

The electrical-machinery industry in Massachusetts plans to channel over $136 million into research and development this year. This is more than 65 per cent of total outlays anticipated by all manufacturers in the state. Programmed expenditures by firms in the electrical-machinery group are up 30 per cent over 1956 when they accounted for 61 per cent of research and development spending by Massachusetts industries. Guided-missile development and other defense-oriented projects contribute heavily to research and development spending among electrical-machinery producers.

Next in size of planned research and development expenditures are the nonelectrical-machinery, instruments and chemicals industries. Together with the electrical-machinery industry, they are expected to account for only slightly less than 90 per cent of total research and development expenditures of Massachusetts manufacturers in 1957. Last year the same industries accounted for approximately 86 per cent of research and development spending by manufacturing firms in the state.

All industries in Massachusetts except food and textiles expect to increase spending for research and development programs this year. The largest dollar increase, over $31 million, is planned by the electrical-machinery producers. Among all other industries only the instruments, nonelectrical-machinery and fabricated-metals manufacturers plan to increase research and development expenditures by more than $1 million.

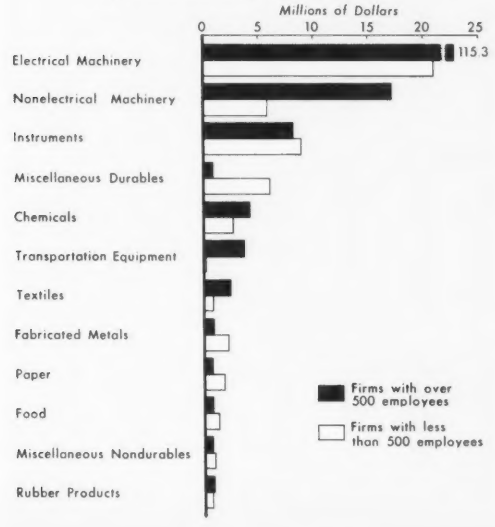
Large Firms Lead in Research and Development Spending

Firms in Massachusetts with 500 or more workers account for about 40 per cent of total manufacturing employment in the state, yet they are expected to provide 75 per cent of the total investment in industrial research during 1957. Current spending plans of firms in this group call for outlays of $155 million this year, 26 per cent more than their 1956 expenditures. Last year this group accounted for 72 per cent of research and development spending by manufacturers in Massachusetts.

Electrical-machinery manufacturers with 500 or more employees plan research and development expenditures of $115 million for 1957. This is nearly 85 per cent of expenditures planned by all firms in the industry and 55 per cent of total outlays planned by all manufacturing industries. Transportation-equipment, nonelectrical-machinery, textiles, chemicals and rubber are others in which expenditures by firms with 500 or more employees will account for more than half of total research and development spending in their respective industries.

INDUSTRIAL RESEARCH SPENDING PLANS

by Massachusetts Manufacturers-1957



Technical Note

Industrial research includes basic and applied research in the sciences and in engineering, design and development of prototypes and processes. It does not include nontechnological activities and technical service, such as quality control, routine product testing, market research, sales promotion or research in the social sciences.

Estimates of industrial research expenditures of Massachusetts manufacturers were derived from data submitted by more than 900 sample firms which employ over 40 per cent of all manufacturing workers in the state. Figures for each industry were estimated by projecting the expenditures of reporting firms in various size classes on the basis of their employment in relation to the total number in the respective size classes.

MANUFACTURING INDEXES — REVISED

The New England and Massachusetts Manufacturing Indexes on this and the next page incorporate two minor revisions of the indexes as they appeared originally in the January issue of the *Business Review,* leading to changes of up to five per cent of the original index. The first revision brings the average of output indexes for the period 1950-1952 to 100. The second revision utilizes the revised figures of manufacturing man-hours in Massachusetts industries which have just been made available by the Bureau of Labor Statistics. Since the manufacturing indexes represent an estimate of production that is based in part on man-hour levels, to the extent that the new man-hour figures are more accurate than the old ones, the revised manufacturing indexes are also improved. This revision, however, affects only the period 1954 to 1956.

NEW ENGLAND MANUFACTURING INDEX — Revised

Federal Reserve Bank of Boston Index Seasonally Adjusted 1950–52 = 100

ALL MANUFACTURING

Yearly Averages

1950	1951	1952	1953
94	101	106	115

Monthly

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1954	108	106	103	100	105	103	105	104	99	105	105	102	104
1955	106	108	107	110	111	112	116	108	113	115	117	117	112
1956	119	119	117	125	120	121	121	118	117	117	118	119	119
1957	117	117	116										

PRIMARY METALS

1950	81	81	88	91	91	95	106	109	108	105	106	107	97
1951	106	104	109	112	109	111	109	114	113	106	102	109	109
1952	107	103	103	92	95	81	66	87	93	98	103	104	94
1953	105	105	108	106	111	110	105	112	114	103	98	91	106
1954	86	83	79	77	82	82	90	86	83	89	91	91	85
1955	94	99	102	103	108	108	100	86	90	105	111	112	102
1956	119	117	107	128	120	110	98	106	112	111	107	108	112
1957	103	105	106										

TEXTILES

1950	101	104	102	107	104	103	109	108	115	113	111	113	108
1951	112	116	110	114	108	107	98	89	96	87	85	93	101
1952	88	87	88	84	87	88	91	99	97	96	103	99	92
1953	98	98	98	99	100	99	93	96	91	87	84	80	94
1954	81	79	78	78	83	81	81	79	72	80	83	77	79
1955	83	85	83	80	75	76	83	79	81	85	86	85	82
1956	87	88	87	90	84	84	79	78	76	77	77	75	82
1957	72	72	71										

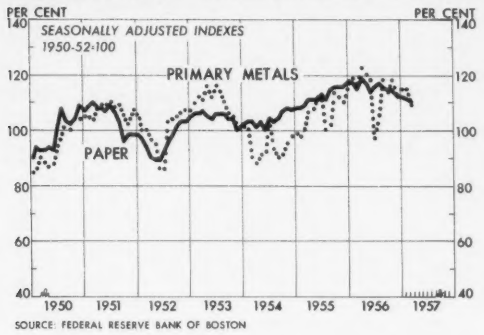
LEATHER AND SHOES

1950	89	95	94	98	90	91	103	109	119	113	105	104	101
1951	105	107	105	99	89	91	94	90	94	88	82	92	95
1952	93	96	100	102	103	103	104	111	110	107	110	111	104
1953	110	108	111	111	114	108	105	107	101	98	100	100	106
1954	99	101	93	96	98	100	105	99	97	105	106	106	100
1955	107	109	104	110	111	113	114	105	116	121	124	119	113
1956	117	118	107	118	114	111	115	110	104	110	112	105	112
1957	107	111	102										

PAPER

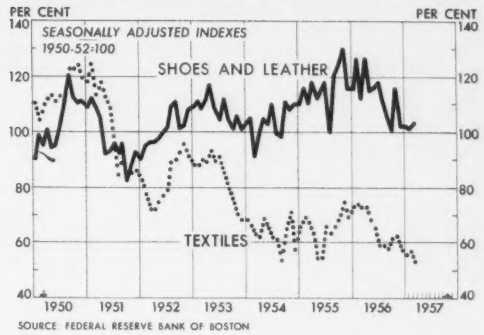
1950	92	90	92	93	91	94	99	102	101	100	101	110	97
1951	98	102	108	107	105	107	107	103	106	98	99	101	103
1952	102	100	100	98	96	97	99	101	103	104	105	107	101
1953	106	107	108	106	108	107	106	111	108	108	109	103	107
1954	106	107	106	105	107	109	105	108	106	111	112	110	108
1955	114	114	114	117	117	118	122	116	118	122	122	124	118
1956	126	127	126	133	129	128	130	128	124	121	125	127	127
1957	126	124	124										

MASSACHUSETTS MANUFACTURING INDEXES



SOURCE: FEDERAL RESERVE BANK OF BOSTON

MASSACHUSETTS MANUFACTURING INDEXES



SOURCE: FEDERAL RESERVE BANK OF BOSTON

MASSACHUSETTS MANUFACTURING INDEX — Revised

Federal Reserve Bank of Boston Index Seasonally Adjusted 1950–52 = 100

ALL MANUFACTURING

Yearly Averages

1950	1951	1952	1953
96	101	104	111

Monthly

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1954	105	106	99	98	103	101	102	101	98	105	107	102	102
1955	105	107	105	109	110	113	113	106	114	119	118	115	111
1956	117	116	115	121	117	119	120	112	113	114	115	115	116
1957	113	114	111										

PRIMARY METALS

1950	85	86	90	88	87	88	94	98	104	100	105	104	94
1951	105	105	104	108	109	109	110	108	109	105	102	107	107
1952	104	100	100	96	95	86	86	103	104	105	106	107	99
1953	107	110	112	111	116	112	116	114	110	106	105	101	110
1954	101	100	90	88	91	92	104	93	90	91	95	98	94
1955	99	98	101	107	108	112	111	100	102	114	112	110	106
1956	117	119	117	123	120	118	97	106	118	114	118	113	115
1957	115	115	109										

TEXTILES

1950	110	104	110	112	113	111	113	113	123	123	124	119	115
1951	118	125	113	118	112	108	96	84	91	85	85	86	102
1952	82	77	72	72	75	77	79	89	90	93	96	91	83
1953	88	88	90	89	93	89	91	85	79	74	70	68	84
1954	68	66	63	62	69	65	62	61	53	65	71	57	64
1955	66	69	67	63	54	54	66	63	66	70	75	69	65
1956	73	74	73	73	68	65	59	59	58	61	62	57	65
1957	56	57	53										

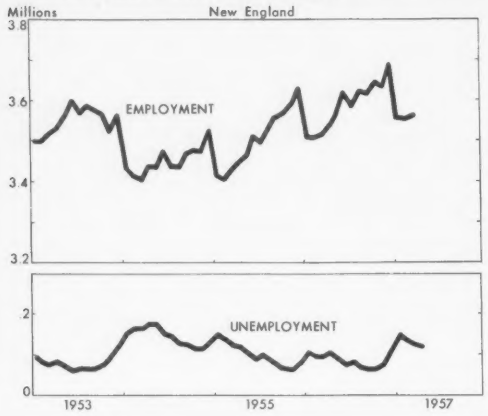
LEATHER AND SHOES

1950	90	99	95	101	94	95	103	111	121	112	110	111	103
1951	109	112	109	105	92	93	96	92	96	82	87	93	97
1952	90	95	96	96	97	99	101	109	111	101	102	108	100
1953	109	111	108	112	117	109	104	112	104	101	106	101	108
1954	103	105	91	98	105	103	110	99	98	111	108	110	103
1955	110	116	110	118	112	115	118	100	121	125	130	116	116
1956	116	127	112	127	115	116	118	111	105	101	116	102	114
1957	102	101	103										

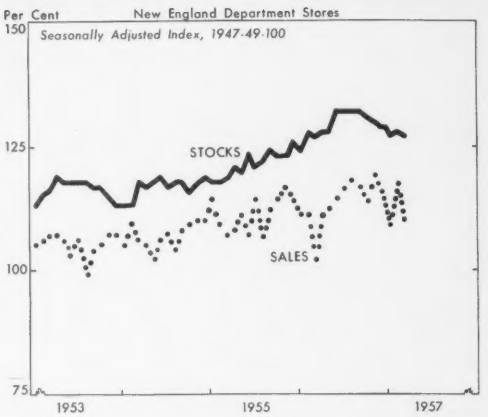
PAPER

1950	90	94	93	93	94	93	102	108	103	102	104	109	99
1951	107	109	110	108	108	107	109	107	103	96	98	98	105
1952	98	97	94	90	89	89	92	96	98	101	103	103	96
1953	105	106	106	107	105	104	106	106	106	104	104	100	105
1954	102	103	103	101	103	100	104	103	104	107	108	107	104
1955	108	108	109	111	111	111	113	111	115	116	116	116	112
1956	118	117	115	119	117	114	116	117	115	114	114	112	116
1957	112	111	110										

EMPLOYMENT-UNEMPLOYMENT



SALES AND STOCKS



MANUFACTURING INDEXES (seasonally adjusted)	MASSACHUSETTS (1950–52 = 100)	Per Cent Change from:		NEW ENGLAND (1950–52 = 100)	Per Cent Change from:		UNITED STATES (1947–49 = 100)	Per Cent Change from:	
	Mar. '57	Feb. '57	Mar. '56	Mar. '57	Feb. '57	Mar. '56	Mar. '57	Feb. '57	Mar. '56
All Manufacturing	111	− 3	− 3	116	− 1	− 1	147	0	+ 3
Primary Metals	109	− 5	− 7	106	+ 1	− 1	138	− 4	− 5
Textiles	53	− 7	−27	71	− 1	−18	103	+ 2	− 3
Leather and Shoes	103	+ 2	− 8	102	− 8	− 5	108	+ 3	+ 3
Paper	110	− 1	− 4	124	0	− 2	156	− 1	− 1

	NEW ENGLAND	Per Cent Change from:		UNITED STATES	Per Cent Change from:	
	Mar. '57	Feb. '57	Mar. '56	Mar. '57	Feb. '57	Mar. '56
BANKING AND CREDIT						
Commercial Loans ($ millions) (Weekly Reporting Member Banks)	1,522	+ 2	+ 7	30,645	+ 3	+15
Deposits ($ millions) (Weekly Reporting Member Banks)	4,142	− 1	− 1	92,747	+ 1	0
Check Payments ($ millions) (Selected Cities)	7,777	+12	+ 6	197,074	+11	+ 4
Consumer Installment Credit Outstanding (index, 1950–52 = 100)	216	0	+10	210	0	+ 7
TRADE						
Department Store Sales (index, seas. adj. 1947–49 = 100)	110	− 6	+ 8	127	+ 2	+ 4
Department Store Stocks (index, seas. adj. 1947–49 = 100)	127	− 1	0	140	+ 1	+ 4
EMPLOYMENT, PRICES, MAN-HOURS, & EARNINGS						
Nonagricultural Employment (thousands)	3,565	0	+ 2	51,369	0	+ 2
Insured Unemployment (thousands) (excl. R. R. and Veterans programs)	127	− 7	+30	1,610	− 2	+11
Consumer Prices (index, 1947–49 = 100)	120.1 (Mass.)	+ 1	+ 5	118.9	0	+ 4
Production-Worker Man-Hours (index, 1950 = 100)	95.0	− 1	− 3	104.6	− 1	− 1
Weekly Earnings in Manufacturing ($)	74.61 (Mass.)	0	+ 5	82.21	0	+ 4
OTHER INDICATORS						
Construction Contract Awards ($ thousands, 3-mos. moving averages)						
Total	130,921	+21	−17	2,671,812**	+11	0
Residential	56,410	+40	0	1,071,480**	+ 9	− 8
Public Works	17,848	+33	−64	422,199**	0	− 3
Electrical Energy Production (index. seas. adj. 1947–49 = 100)*	181.5	− 1	+ 3	229.7	+ 1	+ 7
Business Failures (number)	57	−26	−21	1,336	+17	+14
New Business Incorporations (number)	734	+17	+ 3	11,815	+10	− 8

*Figure for last week of month

**Figures for 48 States replace those for 37 Eastern States reported previously.